

REMARKS

Status

This Amendment is responsive to the Office Action dated August 25, 2008, in which Claims 1-30 were rejected. Claims 16 and 29 have been canceled; Claims 1, 11 and 27 have been amended; and new Claim 31 has been added. Accordingly, Claims 1-15, 17-28, 30 and 31 are pending in the application, and are presented for reconsideration and allowance.

Claim Rejection - 35 USC 101

Claims 1-10, 29 and 30 stand rejected under 35 USC 101 as directed to non statutory subject matter. This rejection is respectfully traversed.

In the Action the Examiner rejected claims 1-10 and 30 as non-statutory asserting that the claims do not recite a useful concrete and tangible result. Claim 1 has been amended and now recites "correcting brightness of the in vivo images in other areas due to under exposure while maintaining an original brightness for the detected anatomical structures". It is submitted that this is a useful concrete and tangible result in that it is useful for image diagnostic purposes as discussed in the application and correcting brightness of an image is concrete and tangible much like adjusting the brightness on a television is concrete and tangible when watching television. Further, an image that has its brightness adjusted is an image which has been transformed into a different image and thus claim 1 qualifies as statutory under the "Clarification of 'Processes' under 35 USC 101" issued by the USPTO on May 15, 2008. Withdrawal of the rejection is requested.

Claim Objection

Claims 2-9, 14, 16, 18, 19-23 and 26 stand objected to for various informalities. This objection is respectfully traversed as the claims have been amended in consideration of the Examiner's comments. Withdrawal of the objection is respectfully requested.

Claim Rejection - 35 USC 103

Claims 1-30 stand rejected under 35 USC 103 as being unpatentable over US Patent No 6,608,942 (Le), US Patent Appl. No. 2003/0023150 A1 (Yokoi) and US Patent No. 6,259,807 (Ravkin). This rejection is respectfully traversed.

In the Action on pages 3 and 4, the Examiner looks to Le for aspects of persevering discontinuities of images. The Examiner's "Response to Arguments" clarifies this and on page 6 asserts that Le has similar motivations and purposes, and particularly points to col. 2 lines 103 and 5-50 of Le. However, Le (as well as Yokoi and Ravkin) do not recognize much less the problem solved by the invention of Claim 1.

In vivo images, preferably should not have regions of significant different in brightness but such areas do exist and particularly areas where there is low brightness because of under exposure (see application page 8, lines 2-6). These areas need to be corrected to become brighter. However, there is a problem with such a correction. When brightness is adjusted upward detail in the image can be lost. This can be a particular problem in areas with anatomical changes, such as crease areas (see crease area 706 of Figure 7A). As a result, there is a need for the ability to adjust the brightness of underexposure areas, such as area 704 of figure 7A, but not to adjust brightness of areas with important anatomical features (see application page 10, 7-10).

The low brightness areas where anatomical structures reside do not need to have their brightness increased and their original brightness needs to be maintained while other areas of underexposure do need to have their brightness increased. This is emphasized in Claim 1 by "detecting areas where light rays are unable to reach directly in certain anatomical structures in the in vivo images; and correcting brightness of the in vivo images in other areas due to under exposure while maintaining an original brightness for the detected anatomical structures".

In contrast, the text of Le noted by the Examiner (col. 2, lines 1-3 and 5-30) discusses smoothing of jagged edges.

It is submitted that smoothing of an edge destroys features (see "It is quite obvious that the indiscriminate use of a low pass filter to smooth an

image will result in a loss of detail and edge definition." Edge adaptive image smoothing, T. A. McMaster, T.A., Communications and Signal Processing, 1991. COMSIG 1991 Proceedings., South African Symposium on Volume , Issue , 30 Aug 1991 Page(s): 58 - 62). As a result, the smoothing of edges taught by Le teaches away from preserving image detail.

As noted above, the invention of Claim 1 calls for correcting brightness of some areas that are not anatomical feature areas and "maintaining" the original brightness of the anatomical feature areas. However, in smoothing the edges Le uses a technique that alters the brightness or intensity of pixels of the edges. This technique is described in col. 3, lines 19-33 as "applying thickening to the zone" of the edge. This will either change a pixel from bright to dark or from dark to bright. That is, in Le the brightness of pixels are altered not maintained as called for in Claim 1. In a certain sense, by teaching altering the pixels brightness, Le teaches away from the brightness maintaining feature of claim 1.

Yokoi and Ravkin add nothing to Le with respect to the above discussed features. Withdrawal of the rejection of claim 1 for the above discussed reason is requested.

Independent Claims 11 and 27 also emphasize the maintaining of the original brightness of anatomical feature areas. Withdrawal of the rejection of these claims is also requested.

The dependent claims 2-10, 12-15, 17-26, 28 and 30 depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also recite additional features not taught or suggested by the prior art. For example, Claim 20, in association with detecting of areas where light does not reach directly, calls for "forming a skeleton image of the threshold image; and testing the skeleton image for one or more areas where light rays are unable to reach directly". The Examiner has not pointed to anything in the prior art that teaches or suggests this. Nothing has been found in the prior art that teaches or suggests this. It is submitted that the dependent claims are independently patentable over the prior art.

New Claim


New Claim 31 emphasizes detecting an anatomical structure area in an image where light does not reach directly and adjusting the brightness of the image except in the anatomical structure area. As discussed above, Le alters the brightness of the pixels in the area of edges. Yokoi and Ravkin add nothing to Le with respect to the above discussed feature. It is submitted that Claim 31 is patentable over the prior art.

Summary

Should the Examiner consider that additional amendments are necessary to place the application in condition for allowance, the favor is requested of a telephone call to the undersigned counsel for the purpose of discussing such amendments.

For the reasons set forth above, it is believed that the application is in condition for allowance. Accordingly, reconsideration and favorable action are respectfully solicited.

Respectfully submitted,


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If the Examiner is unable to reach the Applicant Attorney at the telephone number provided, the Examiner is requested to communicate with Carestream Health, Inc. at 585/627-6687 or 585/627-6740.